

IOWA HIGHWAY RESEARCH BOARD

Minutes of February 23, 2001

Regular Board Members Present

J. Adam
J. George
L. Greimann
D. Julius
B. Keierleber

R. Krauel
K. Mahoney
T. Myers
D. Osipowicz
W. Weiss

Alternate Board Members Present

G. Miller for J. Selmer
W. Nixon for J. Odgaard
J. Weber for J. Witt

J. Ites
C. Van Buskirk

With No Representation

None

Secretary

M. Dunn

Visitors

Ed Engle
Roger Gould
Larry Jesse
Ian MacGillivray
Mohammad Mujeeb
Bob Steffes
John Sommers
Sara Buseman
Steve Andrie
Omar Smadi
Dale Harrington
Dean Majzoub
Gordon Smith
Hosin "David" Lee

Iowa Department of Transportation
Iowa Department of Transportation
Iowa Department of Transportation
Iowa Department of Transportation
Iowa Department of Transportation
Iowa Department of Transportation
Iowa Department of Transportation
Iowa Department of Transportation
CTRE
CTRE
CTRE - PCC Center
Federal Highway Administration
Iowa Concrete Paving Association
The University of Iowa

The meeting was held at the Large Materials Conference Room at the Iowa Department of Transportation, Ames, Iowa. The meeting was called to order at 9:00 A.M. by J. Adam.

- New Board Member, Kevin Mahoney introduced himself to the board.

Approval of the Minutes

- Randall Krauel moved and Doug Julius seconded the motion to accepted the minutes from the January 26, 2001 meeting with no additions or corrections. They were approved by the Board with 12 yes, 0 no and 0 abstaining.

Agenda Review/Modification

- No changes.

Annual Report

- Mark Dunn mentioned that all board members received an annual report for their information. There were no questions or discussion on the report.

Problem Statement, “Field Testing of Abrasive Delivery System in Winter Maintenance”

- Wilfrid Nixon presented the requested problem statement resulting from last meeting’s final report findings of TR-434, “The Use of Abrasives in Winter Maintenance”. After reviewing his findings, he recommended that due to the cost and other factors of the hot rock system and the hot water system, it may be best to bring back a proposal involving research on only the pre-wetting at the spinner system. The outcome goal of the project would be an improved method for abrasive delivery which would result in a tool for enhanced winter safety.
- Tom Myers - Aren’t the abrasives still there, they’re just not in the travel portion of the road? Is there a way to bring it back into the travel portion of the road, especially in an urban setting?
- Wilfrid Nixon - In an urban setting, the issue is less difficult because the speeds are typically not as high. The trouble that you get into in rural setting is that you have people going 40-50 miles per hour and the air currents from the car move the abrasives out of the travel lanes. No one that I am aware of has looked at methods of sweeping it back into the travel lane. What apparently happens is that the abrasives are swept off the side of the road into the ditch. I don’t know how effective it would be to try to sweep it back from the ditch.
- Tom Myers - On the interstates, there could be some percentage of it laying on the sides that you could reincorporate.
- Wilfrid Nixon - That would be something that we could look at in this study; where does the abrasive go when a car goes past.

- Wade Weiss - I have a question regarding the funding levels. Was this one of our priorities, is that why the funding is where it is at? The DOT used liquid brine in a pre-wet and has since gone away from that as far as I know. They are using twice the material on an 1/8 of the roads that we were using them on. So I think to the primary system this would be a great benefit, with the speeds. I don't feel that we're experiencing that many problems and I wondered if this is more of a primary project.
- Kevin Mahoney - Our abrasive use over the years has steadily declined. We do pre-wet abrasives when it's the right conditions. Generally we try to melt with chemicals.
- Wade Weiss - Then are we going to try to research something that has already been proven that we don't need? It appears that we've tried the liquid brine as a pre-wet.
- Kevin Mahoney - So you're saying that in your area that they've gotten away from the use of liquid brine?
- Wade Weiss - As a pre-wet, I would say yes.
- Kevin Mahoney - I don't know if that is consistent state wide. Our objective in winter snow removal is to provide traction for as long as we can and we do that predominately with chemicals if the temperature conditions and pavement temperatures are right to do that.
- Wade Weiss - Are we talking about only pre-wetting a granular substance or is it salt?
- Wilfrid Nixon - This is only concerned with abrasives. The issue here is that there are circumstances where, because of low temperatures for example, you can't use chemicals to try and remove snow or perhaps on gravel roads you don't want to use chemicals due to the other negative effects. Abrasives are really the only thing you have left to use at that point in time. The draw back with abrasives is if you put them down on a road with high speed traffic, anything over 35 - 40 miles an hour, they get swept off the road by the passage of the vehicles very rapidly. It looks like between 10 - 20 vehicle passages will get rid of any beneficial friction enhancement which that abrasive gave if you put it down dry. (Dry in this case means pre-wet in the stock pile.) There have been studies that have looked at pre-wetting chemicals that have found if you pre-wet at the spinner, you reduce the wastage of chemical that bounce in the ditch when you deliver it from about 30% down to 4%. So the idea here is two fold. First, pre-wet abrasives at the spinner and more of it should stay on the road. Second pre-wetting should melt a bit of the snow and ice it falls on and then re-freeze as the brine gets diluted, and if that happens, you've frozen your abrasive into the top of your snow pack and have created something that is like an abrasive sand paper.
- Jim George - I believe your research has merit, especially with the recommendation to drop the hot water part. I also appreciate your comments on the worthiness of investing in a zero velocity spinner. I do agree with Wade's comment that 80% secondary does seem pretty generous on our part. I wonder if the DOT doesn't get some more benefit from this too, more than 10%?

- Mark Dunn - The percentages were carried over from the previous project. They can be altered if necessary.
- Jerry Weber - Are you going to try to do any correlation between the amount of pre-wet and temperature.
- Wilfrid Nixon - Yes.
- Jerry Weber - I pre-wet all of mine (not at the spinner) and add about 10 gallons of chloride to my sand, not just to keep it from freezing, but I use it when the temperature is right. It saves me from having to put these on every truck.
- Wilfrid Nixon - My starting point on that would come from the guidelines that exist on how much you pre-wet chemicals according to temperature. Those may be a little high because the reason you pre-wet a chemical is two fold. First to stop it bouncing off the road and second to kick start the chemical reaction. If you put salt down dry on ice, nothing will happen. So we might need to go with lower levels of pre-wetting, but that may be the place to begin with those standard temperature and pre-wet amount relationships.
- Dennis Osipowicz - Are you going to have any chemical/salt in the sand? If it's down 10 degrees, you aren't going to get sand out of your truck. I think everybody uses some type of salt/sand mixture.
- Wilfrid Nixon - There are ways of doing that. Whether you do it straight sand or some type of mix, those are part of the variables of field testing. There are a range of different mixes that people use around the state and we have that data. I would envision using those different mixes so, that as thorough as we possibly can, we cover what people are actually using rather than one particular number which would be rather limited. I have been talking with Mike Gardner, the Johnson County Engineer, and he thinks that there are some stretches of road around that he might be able to use as test sites. Whether those are the ones that we would end up using, I don't know, there may be even better places.
- John Adam - Kevin, from a DOT standpoint, what level of value do you see in this kind of research?
- Kevin Mahoney - There are a few times during the year that temperatures are so cold you have some ice pack and need to provide some traction. Obviously, with the retention of the abrasives, the longer the better. The comment about embedding it in the ice and as that wears down you still have some traction, has some merit. In general, I would say the benefit is fairly low. In your statement you're looking at a 300 - 500 ADT, which would be at the bottom end of our mileage. You mentioned Johnson County, a big commuter county, where that ADT is probably pretty good. A question I had with your cost estimate, did you factor in the need for a brine making facility or were you targeting a location which already has that.

- Wilfrid Nixon - One of the things I was thinking of doing if we were to do this in Johnson County, was probably talking with the people at Oakdale.
- John Adam - I'd suggest Primary at 25 - 30% perhaps.
- Kevin Mahoney - A comment about the curb and gutter areas, that's an area with which we really have a dilemma. The abrasive we put down, we are finding that we need to sweep back up. The cost of that abrasive is getting really high due to the number of times that we handle it. Plus, we are plugging up storm suers and some of our counties where we get into air quality threshold issues and that, we have to take a little bit different view point of it.
- John Adam - Maybe the issue of where those abrasives go has a little bit more value to it.
- Tom Myers - Possibly in an urban setting, capturing that and re-incorporating it into the next year if you don't run into problems in that process.
- Kevin Mahoney - Once you recapture it, it has hazardous constituents as a part of it so it is regulated waste.
- Tom Myers - I agree, but you're going to have to handle it either way. Whether you re-incorporate it or handle it the other way you still have that issue. I would make a motion to approve. Do we want to recommend any changes in the percentages.
- Wade Weiss - I guess I would like to see the secondary proportion reduced. I understand what Kevin is saying. Although they don't use it as much, in the future, I think we're probably going to see it.
- John Adam - Would 30 - 60 - 10 sound about right?
- Tom Myers made a motion with that split. Wade Weiss seconded. It was approved by the Board with 11 yes, 0 no and 1 abstaining.
- Wilfrid Nixon will come back with a proposal for research.

Proposal, "Development of a Manual Crack Quantification and an Automated Crack Measurement System"

- Hosin "David" Lee presented the proposal which has had a change of scope from the initial problem statement presented over a year ago. The part that was added dealt with the manual crack measurement system. This is not a data collection system; instead the goal is to develop a software systems to manually measure cracks to compare to the information provided by Roadware Inc., and to develop a consistent system to automatically process crack data.
- Tom Myers - Are these two programs proprietary in nature or are they going to be available to

all municipalities at no fee?

- Hosin “David” Lee - Upon development of the program, it is our intention to make all the software package available within the state of Iowa through the DOT. I discussed that with Ian MacGillivray and will work with him to make it available to the counties and cities without any extra costs. That would be limited to the state of Iowa.
- Tom Myers - Would we have to buy the Roadware program for this to merge with?
- Hosin “David” Lee - No, the software will be developed independent of the Roadware program. With them being a private business, we do not have access to their information.
- Tom Myers - And we wouldn’t be infringing on any of that?
- Hosin “David” Lee - No, and actually I have a previous version of a copyright, so we made proper arrangements so it would be available to the state of Iowa.
- Brian Keierleber - In your budget, you have software license at \$25,000, who owns that software?
- Hosin “David” Lee - The software hasn’t been developed yet, but the previous version was copyrighted to The University of Utah and has been licensed to a private company. That amount not only includes the license of the existing software that we can use, but also some development effort. I have discussed that with Ian and we have worked an arrangement with The University of Iowa, private company and Iowa DOT.
- Brian Keierleber - So does The University of Iowa or the private company get the money?
- Hosin “David” Lee - That money would be given to the private company for a software license plus modifications to fit our needs.
- Ian MacGillivray - \$25,000 is not just a license fee, it is the total cost of the software, development, licensing and everything. Dr. Lee and I have had a discussion on how we handle this type of thing with the board and I think it is a reasonable business cost for this project.
- Glen Miller - How significant is this crack index in our decision making process? Is it somewhere where we should be spending our efforts?
- Jim George - I think that it is significant. The counties are having a problem with this GASB 34 coming up and I’ve looked at the Roadware information as a way to monitor how your pavements are doing? The current method is every 10 years and that’s just not soon enough. That GASB 34 is a 3 year cycle. So, I could see quite a bit of merit in this basic enhancement on the Roadware work.
- John Adam - John Sommers works with pavement management quite a bit, could you comment on that John.

- John Sommers - We support Dr. Lee's proposal in our efforts. For us it's a check of about 10% of the NHS, basically a quality assurance issue. I'm not looking at it from the standpoint of checking anything that's being done on the county at this point. We're basically for it because it consolidates and simplifies some of the information that's provided. We typically prepare Excel sheets out of our pavement management database and presently we have about 22 different fields for crack and patch. This would present 1 field that would give the overall percentage of the distress of a particular pavement section. So it would be a lot easier to use for the districts. We like the idea of using the visual images because we presently just get numbers. We don't have anything that we could automatically say that this is or is not a good value. When we get these numbers, we have no checking procedures. We like the idea of the tiling, seeing how the distress is represented, and it's easier for us to use. We are looking at it as a check to validate some of the information we are already given.
- Randall Krauel - Do we expect this to replace some of the data in the future that a company like Roadware may supply the governmental agencies?
- John Sommers - We personally are not looking at it as a replacement for what Roadware does. This is a 10% check of the system of just the NHS and we need some validation. Right now, all we have is numbers.
- Randall Krauel - The original validation, wasn't that manual review generated to validate the data that Roadware provided?.
- John Sommers - In the past, we have had a manual system and we have an historical record that reflects that. When you try and use the Roadware data and bring that manual system into the same process, it just doesn't mesh. So we're looking at numbers that don't really relate to each other.
- Randall Krauel - So this one can be related?
- Hosin "David" Lee - We worked with the DOT so that this one can be related.
- Tom Myers made a motion to approve. Jim George seconded. It was approved by the Board with 13 yes, 0 no and 0 abstaining.

Final review of requests for proposals for the Second Solicitation of priority projects.

- Mark Dunn had made the recommended changes to the request for proposal drafts for the second group of projects which were prioritized last year. Four of these were included in the board packet. The request on Sensors and Continuous Monitoring still needs further revising. Mark will have revisions to this one within the next couple of weeks and will send it to the board members for review. Any comments should be given back to Mark. If there seems to be a supportive consensus, this one will be mailed out with the other 4, otherwise it will be held for more discussion at the next board meeting and then sent out at a later date.

- One thing to be attentive to is to make sure we are confident in the level of funding. Last time we sent one out with a higher level of funding and when the proposal came in, there was a question about if that was too much. We need to be prepared to fund at the level initially stated.
- Those that were approved as written included the following:
 - Erosion Control for Highway Applications
 - Living Snow Fence
 - Manual for Roadside Control of Trees and Brush
 - Field Performance Study of Past Iowa Pavement Research: A Look Back
- Mark Dunn will send these four out within the next few weeks (Sensors and Continuous Monitoring may also be included). It is expected that proposals will be received in time to be reviewed at the May or June meetings.

Mark Dunn handed out a financial overview on each of the different funds, Primary, Secondary, and Street.

- This information was requested at the previous meeting and intended to give the board members an idea of the balances and allocation of funds in each account after the initial trail under the new business plan.
- Lowell Greimann - We were going to reserve 50% for unsolicited projects. Did we do that this year?
- Mark Dunn - We've come in quite a bit lower this year. I think one of the benefits of doing it the way we have, is that the project totals have been lower than what they have been in the past and we haven't done quite as many projects as we would have by this time every year, so we're in good shape. I can come up with a way to present that a little easier. We have a set amount every year from the street fund and the DOT fund, and a pretty steady amount from the counties, although it fluctuates some based on the taxes. I can come up with an estimate of what's available, what has been spent out of each account and leave a balance for the year just on one sheet of paper that would be easier to look at.
- Randall Krauel - Can you add to that, a projected amount that we would anticipate based on the RFP's that are out? There is a funding target on each RFP and if that's added to it, then we would know this bottom line and know what we had left for unsolicited proposals.

Review of the past year's business and modification of the IHRB Business Plan

- There was a request for developing a tool for evaluating proposals and looking at competing proposals. Mark Dunn handed out a packet of information from various sources with different approaches of doing just that.
- Ian MacGillivray gave an overview of where some of the information was from. This

information is being shared to lead to the basis of future discussion on developing this process for the board.

- John Adam - So you are suggesting that the board review these and, at a later date, develop some kind of a procedure.
- Dennis Osipowicz - We need to do it before May, incase we get some competing proposals.
- Mark Dunn - The April meeting may be a good meeting to get something finalized.
- Wilfrid Nixon - It may be a good approach to just take one of these and try it to just see how it works, and with that experience, can modify it from there. Maybe we should just look through these and see what one looks like it may be the easiest for us to use and go with that one.
- John Adam - With that in mind, I think we can get this on the April agenda and in very short order be able to come up with something. Now getting back to the business plan, do you have any comments or suggestions?
- Tom Myers - Under “The Board is composed of 13 members as follows:”, I would like to see, “the cities of the Iowa municipalities nominated by the American Public Works Association”, not “the Iowa League of cities”, because that’s traditionally what has happened in the past.
- Ian MacGillivray - I would like to provide a short briefing, from a staff viewpoint on what the business plan has meant so far. With what you were expecting from us and what we represented to you that we would do, we’ve learned a couple of lessons. With the preparation of RFP’s, there’s more to that than we thought. We are going to have to improve on what we put into developing that process further. With the review of proposals, we’re going to have to do some research into the research proposals; to evaluate the proposals and availability of research, from a staff viewpoint, and come back and advise you more about what’s the current state of the art within that topic. This will help you as you evaluate the responses to your RFP’s. We’ve had focus groups around for a while, a couple of them are losing there energy/self-generated motivation. We’re going to have to spend more time getting that process to be more productive. A few of the focus groups are very good, and a few have fallen by the way-side. We also identified from your subdivisions of how you look at the research program, there are some topical areas where we don’t really have any effective stakeholder type input to support you. So we need to look at how to organize and solicit that type of input back. Finally, on the solicitation process, when you’ve identified topics that you want to receive proposals on, we’re going to have to do more in the way of marketing so that we see more competing ideas/proposals on what can be done. In general, looking at it from the staff side, those are the areas where we have a little ways to go to complete what we said would be the type of support we would offer in implementing this business plan. We’ve accomplished a lot, but need know there are some shortfalls. At a national level, people are interested in what we’re doing.
- John Adam - The issue on the focus groups is a bit unclear, or maybe we’re still trying to develop this process a bit. We have industry groups, focus groups, areas of interest and to me

it's not clear how we get those topics, how they're generated or if there's a systematic way of doing it. I know it's been done in the past, but I don't know if there's been a well defined process for it. I'm not sure if that's part of the business plan or not or where that fits in or how to accomplish that.

- Ian MacGillivray - It's meant to fit in, in terms of generating input to be available to the board. To both give them input from a broader cross-section of people who are specialized or experts in different areas of practice. It is meant to be supportive of this overall board prioritizing and agenda process. As to how they are organized, we identified a few topic areas and tried to get them organized. We knew we weren't supporting every area of research interest. Others came forward and said that they would like to organize a focus group in a particular topic. We encouraged that because we felt that wherever we could get an organized input that supports this process, it doesn't matter where it comes from, only that it be effective and technically competent. What's happened in that process then, is a few areas have not been covered at all. A few that worked very well because a group was motivated and wanted to do it, we probably didn't do a good enough job in giving feedback as to what they gave us and what we did with it, or secondly, some of the groups thought, we're done. As a result, some of the groups have fallen into limbo. I think we need to refresh and formalize this process and provide more staff support for it.
- John Adam - It seems to me that we do need to focus on that, whether it's staff support or supported by the board. It sounds like more of a staff item.
- Ian MacGillivray - Something that we've done with a couple of project, is taken advantage of more of the staff in the department and received support from them. We've also reached out and drawn in from people around the state, like board members, who are recognized as knowledgeable in a particular area. We haven't been as systematic about that as we need to be, but it's valuable and I think it's worth investing the time and effort. We also discovered it takes more lead time. We're learning as we go.
- Lowell Greimann - I think it's been working very well, for the first time.
- Ian MacGillivray - As for the staff time capabilities, that's one of the things that we're testing as we go. The NCHRP has a staff of 7 full-time and 3 part-time. They add about 20 new projects a year. The projects average about \$250,000 to \$750,000 a piece. So there are some scale things that are quite different. They also support a complicated panel process with it. But the bottom line is there is a lot of staff and panel time that goes into it. If you back up and look at the process that the board is doing, which is like the NCHRP Panel (standing committee on research), there is not as much staff time that goes into it and the proposals that are chosen come in a little more flushed out than what we've done, so there is something to be reacting to in the first place. That's the missing ingredient for us here with what we've been doing so far. We had very simple ideas that were suggested, and we've attempted on some of them to come up with a little bit more detailed proposal, but we don't really have that to start with. We're willing to make our best effort to invest staff effort into some of this, but can't do the whole list

of 32 or so. You'll help us narrow that down to where you want us to start. What is it that you want us work on for you?

- Lowell Greimann - On a different issue, I'd like to see someone draft a paragraph about continuing projects. I'd like to see somebody look at the minutes and try to remember what got said at the last meeting and draft a paragraph on how we're going to handle those.
- Dennis Osipowicz - Some of the RFP's we're asking for now are going to Phase II projects.
- Lowell Greimann - Yes, and the one we looked at last time was not even part of the solicitation process, but we went with it on the basis that it was continuing.
- Mark Dunn will work on some language, based on some of the discussions we've had and bring it back and see if it works for the board.
- Dennis Osipowicz - The comments were made that we have not had the number of projects presented to us and we're in good shape financially this year because we have not had as many, are we missing some? How do we handle that, because we're not processing as much research as we were the previous year.
- Mark Dunn - Some of that is a function of switching over from taking something every month to collecting it over several months. Our first approvals were in our December meeting. So we went July to December basically without spending any money at all. I would hope as we get into this and when it has evolved over a couple of years, that it will come back up to what it was before and we will be able to spend what we have allotted to us if necessary.
- Tom Myers - I think what we need to do is not only incorporate our affiliations and our needs, but allow segments from CTRE, Iowa Asphalt Association, Iowa Concrete Association or whoever else in the audience to interject their ideas too for our consideration. In terms of the whole program, including brainstorming.
- Dennis Osipowicz - That's where the focus groups come in too.
- Wilfrid Nixon - Another way of doing that is, rather than having a category of other projects of merit, modify that to allow people to come in with pilot projects (brilliant ideas - that we would like to follow through with). People could ask for proving funds for relatively small projects, maybe \$15,000-\$25,000. We limit the number that we do each year, but we let researchers in the state know, that if you have this wonderful idea and are willing to come and present it to the board and convince us it is worth researching, that would give them seed money to go away with and prove that it is a wonderful idea.
- Dennis Osipowicz - I think that falls into the other projects of merit category.
- Wilfrid Nixon - Maybe we need to encourage that more.

- Mark Dunn - I think we've had a couple of occasions where that has happened and the majority of the board has wanted to hold off on them if there wasn't an immediate need, and put them into the process for the next time around.
- Lowell Greimann - I think we're learning. Some of the researchers, initially nervous with the changes, are coming to the meetings and getting a feel for the process a bit better. I think if we advertise a little more that these funds are available and emphasize the focus groups, that these will be big ways to get projects before us. I'm hoping it will be better next year.
- John Adam - What has happened with funds in the past? I'm assuming that the funds had all been exhausted by the end of the year.
- Dennis Osipowicz - That's how we got into this, we were in the middle of the year and the city didn't have any money. And that year, there were a lot of projects that had a lot of city impact.
- John Adam - What happens if there is money left at the end of the year?
- Mark Dunn - City and County has theirs roll over to the next year. The state has to use their's or they lose it.
- John Adam - That's why I was wondering, if there was a need to solicit for more to use the money. If we can carry it over, I don't see the immediate need for that. As for focus groups, from the DOT standpoint, we can organize these internally, but that's just us.
- Lowell Greimann - CTRE has come up with some too.
- Dennis Osipowicz - At one time, the DOT had talked about putting another board member on and the counties had talked about putting on our TRB representative.
- Ian MacGillivray - That's being discussed at the management level at the DOT at this point.
- Jerry Weber - The counties were thinking of the TRB representative as a continuity type of thing. That person could be on for several years; where most of us are on for 3 years.
- Lowell Greimann - Are you all comfortable with the way the percentage splits?
- The group agreed they were.
- John Adam - Do we need to revise the language on the "other projects".
- Dennis Osipowicz - We had a project on maturity testing that was that way. We had a project that we needed to get traffic on right away, within a matter of 2 months had the problem statement, the proposal and it was in our contract. It got delayed because of some problems with federal funding. So by the time we finally got it let, we had it in our proposal to do the

research. That was very immediate.

- Mark Dunn - I think projects like that are accounted for, but the type that Wilfrid was referring to are somewhat excluded. That may require some changes in the text. Currently, if someone has a brilliant idea, they have to wait until the next brainstorming, unless there is some sort of matching funds or urgency.
- Wilfrid Nixon will work on some terminology for a paragraph on the great idea approach and get the information to Mark.
- John Adam - I think it would be appropriate to get that to Mark and he will incorporate the comments and changes and bring back another draft next time.

Brainstorming for development of FY02 project topics

- Members and alternates gave input on brainstorming ideas for research topics for the next year. Mark Dunn and Ian MacGillivray will meet and organize the ideas according to category and present a list to be prioritization at the next meeting.

New Business

- None

John Adam adjourned the meeting.

Date of Next Meeting

THE NEXT MEETING WILL BE HELD MARCH 30, 2001 AT 9:00 A.M. IN THE LARGE MATERIALS CONFERENCE ROOM AT THE IOWA DOT.

Mark Dunn, Secretary